REMARKS

While reviewing the specification, certain typographical errors were found, which were corrected in the amendment to the specification to provide the correct reference numbers and the correct reference to the respective layers as amended on page 5. Entry of this Amendment is therefore requested to correct typographical errors and to place the specification into agreement with the figures and with other portions of the specification.

This reply is in response to the Office Action mailed July 3, 2002. Entry of the Amendment and favorable consideration is respectfully requested.

The Examiner rejected claim 25 under 35 U.S.C. §112 first paragraph. Claim 25 is hereby cancelled to obviate the rejection.

Claims 14-25 were also rejected 35 U.S.C. §112 second paragraph based on indefiniteness. In particular, the Examiner stated that different terms were used with respect to the layer and that where one claim used the word "opening" the other claim used the word "recess".

The appropriate amendments have been made to claims 14 and 21. In particular, the word "opening" is being used uniformly for claims 14 and 21. Other amendments have been made to claims 14 and 21 to make the respective layers clear so as to over come the rejection for the lack of indefiniteness.

The Examiner pointed out that within the specification, the third layer 52 is the layer which has the opening formed there through. Within claim 14 this is recited as "the first layer" and within claim 21 this is recited as "the second layer". Within claim 14 the layer referred to is "the first layer" in fact includes, layer 52 as shown in figures 3-6 of the present application. Within claim 14, the term "first layer" is used because this is the initial layer recited in the claim. It would not make sense for applicant to refer to "third layer" within claim 14 when a first and second layer have not previously been introduced. As the Examiner can appreciate, the invention can be made without having the first layer of 44 or the second layer 48 on the substrate since these are preparation layers which are presented in a preferred embodiment but are not required to be present in all embodiments. Applicant has therefore made an effort to claim the invention in such a way as to cover those processes where prepatory layers are not

formed or, alternatively where three or more prepatory layers may be formed. A person of ordinary skill in the art, reading claim 14 would clearly understand reference to the first layer as being a first layer for claim 14 and also being that layer which has the opening formed there through and therefore the claim is believed sufficiently definite as to be understandable. As an alternative, Applicant could refer to this layer as "an insulation layer" or "layer for which an opening is to be formed therein" or other name other than "first layer", however, this may in fact create more confusion for the reader. Given the present explanation, and that these remarks are part of the file wrapper history, it is believed that a person of skill in the art reading the claims, together with these remarks will clearly understand the invention as claimed.

Claim 21 is also believed sufficiently clear making references to "first layer" and "second layer". Within claim 21, the first layer corresponds to layer 48 or, a combination of 48 and 44 and the second layer corresponds to layer 52. Within claim 21, additional layers are introduced and therefore, the layer which has the opening there through is the "second layer" as introduced within the claim. It is therefore believed that claim 21 is also sufficiently clear that a person of ordinary skill in the art, reading the claim will understand the invention therefrom.

Claims 14 and 21 have been amended to insert additional limitations which are not found in common nor obvious in light of the art.

In the specification, on page 7, lines 19-25 applicant points out that in step 80, an ion implantation is performed to place ions under the dielectric spacer 74. In one embodiment, the self-aligned channel 81 is formed by implanting at multiple angles under the dielectric spacer 74 and each side of the opening 56 in order to provide an ion implantation of a selected dose under the spacers 74.

The prior art fails to teach, or suggest implanting at multiple angles to provide such ions under the dielectric spacer 74. In particular, Kao et al. teaches a first blanket implant in figure 5 to produce the LDD region 19. He states, that the LDD region is preferably done into the entire active area 17, see column 4, lines 25-32. This has the affect of causing a modification in the entire electrical characteristics of the entire active area, including directly under the gate as well as other portions of the active area. In some circumstances it is not desirable to have this LDD implant throughout the entire active area, rather, it is preferred to have a specific implant which occurs under the dielectric spacers 74.

At a later point of the process, Kao teaches, in figure 10 an active area implant into the substrate itself, see column 5, lines 7-17. As Kao explains in column 5, the side walls spacers act as a mask so as to prevent the implant from going into the substrate under the side wall spacers 30 as he shows in his figure 10. Thus, Kao teaches directly away from the current claims since he uses the side wall spacers 30 to act as a mask to the implant and thus prevents ions from being implanted underneath the dielectric layer. The present invention, on the other hand, contemplates an ion implantation under the dielectric spacers 74 as described see page 7, lines 20-25 of the present application and as can be seen existing in figure 7.

Goth et al., U.S. Patent 4,758,528 also fails to teach implanting at an angle in order to place implanted ions under the dielectric spacers. Goth et al. teachings in the, ion implantation for his figures 5A-5F as well as the description of these and other figures for example in column 7, lines 45-57; and column 11, line 47, as two examples. Other examples as provided elsewhere in the specification. In each instance, the side wall spacer 40 of Goth et al. is used as a mask for the implantation. There is no discussion or explanation of implantation at a selected angle in order to place ions underneath the spacer 40 of Goth. Instead, he appears to implant through openings created within the spacers and then heats the substrate in order to cause the dopens to diffuse and move slightly so as to have a position underneath the spacers 40 of figure 3 or the spacers 56 of figures 5A-5F. Applicant has been unable to find within the large specification of Goth any discussion or teaching that ions are implanted at an angle to provide pocus or halos of implanted ions underneath a dielectric spacers 74 on each side of the openings 56.

Applicant therefore believes that claims 14 and 21 as amended are clearly patentable over the prior art of Kao et al., Goth et al., or all other prior art of record.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version With Markings to Show Changes Made.**"

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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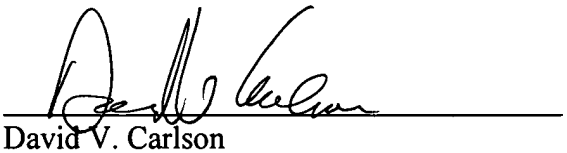

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Paragraph beginning at line 16 of page 5 has been amended as follows:

In a step 46, a second layer 48 is formed on the first layer 44. The second layer 48 is formed from a material that is chemically different than the first layer 4442. As a result, the second layer 48 may be etched by an etching process that does not etch the first layer 4442. The shallow trench isolation structures 39 are protected from etching processes that could damage or affect them by chemical selectivity with respect to the second layer 48, *i.e.*, etching processes for structures formed on the second layer 48 are chosen to not be able to etch the first ~~second~~ layer 4448, thereby shielding structures below the second layer 48 from these etching processes.

In the Claims:

Claims 14 and 21 have been amended as follows:

14. (Amended) A method of forming a feature having a critical dimension comprising:

providing a substrate;

forming a first layer having a first thickness;

forming an opening extending through the first layer, the opening having vertical sidewalls separated by a width greater than the critical dimension ~~extending through the first layer~~;

forming a blanket dielectric layer having a second thickness in the opening, on the first layer and on the sidewalls, the second thickness being half or less of the first thickness;

selectively and anisotropically etching the blanket dielectric layer to form dielectric spacers on the sidewalls and to remove the blanket dielectric layer from a bottom of the opening without etching the first layer, the dielectric spacers separated by a gap having a width equal to the critical dimension;

implanting ions into the substrate at a location beneath the dielectric spacers, the implanting being performed at an angle to provide implanted ions under the dielectric spacers on each side of the opening;

forming a second layer in the gap and on the first layer;

removing those portions of the second layer formed on the first layer using a chemical-mechanical polish without removing portions of the second layer in the gaps; and

removing the first layer but not the dielectric spacers.

21. (Amended) A method of forming a feature having a selected dimension comprising:

forming a first layer having a first thickness on a semiconductor substrate;

forming a second layer over said first layer, said second layer having a second thickness thicker than said first layer and being etchable by a different etch chemistry than said first layer;

forming an opening ~~a recess~~, having vertical sidewalls separated by a width greater than said selected dimensions, said opening ~~recess~~ extending through said second layer and not through said first layer;

forming a blanket dielectric layer having a third thickness on the second layer and within the opening ~~recess~~ and on top of the first layer within the opening~~recess~~, said blanket dielectric layer being on the sidewalls of the second layer, the third thickness being half or less that of the second thickness;

selectively and anisotropically etching the blanket dielectric layer to form dielectric spacers on the sidewalls of the second layer and to remove the blanket dielectric layer from a bottom of the opening~~recess~~;

implanting ions into the substrate at a location beneath the opening, the implanting being performed at multiple angles to provide implanted ions under the dielectric spacers on each side of the opening;

etching the first layer to expose the substrates and form a gap having a width equal to the selected dimension between the dielectric spacers;

forming a fourth layer in the gap and on the substrate; and

removing any remaining portions of the second layer without removing the dielectric spacers.

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